

## 2017 Annual Report on Caltrans' Use of Waste and Used Tires

### Background

According to the California Department of Resources Recycling and Recovery (CalRecycle), California generated an estimated 48.5 million (Passenger Tire Equivalent) tires in 2017. Of these tires, Caltrans projects using asphalt containing crumb rubber diverted over 4.7 million from disposal or stockpiles through recycling, reusing, or as tire-derived fuel/materials. Of the total 4.3 million metric tons of paving asphalt Caltrans used, 1.7 million metric tons contained crumb rubber, which is an average of 39.5 percent and 100 percent of the asphalt containing crumb rubber was rubberized asphalt concrete. The expansion of the existing markets for waste tire products such as rubberized hot mix asphalt (RHMA), vegetation control mats, or rubber mulch, will assist in addressing potential tire stockpile issues and their associated environmental impacts. Caltrans used an average of 60.9 million pounds of CRM in rubberized asphalt concrete, which equates to 14.0 pounds of CRM per metric ton.

### Caltrans' Efforts

The California Department of Transportation (Caltrans) has established a variety of uses for recycled content tire products for civil engineering applications in transportation projects. Caltrans is committed to helping reduce the number of waste tires entering California's landfills by aggressively pursuing innovative uses for these tires. Although RHMA is viewed by many as the main avenue to aid in this effort, Caltrans is also pursuing other uses that can potentially consume large quantities of waste tires. Caltrans also uses waste tires in other asphalt applications and innovative products.

Caltrans' largest use of waste tires is in RHMA pavement material as an alternative to hot mix asphalt (HMA). The percentage of actual amounts of RHMA placed compared to that of HMA placed in 2017 was 51 percent. The 2018 projection for the amount of RHMA compared to HMA is also approximately 51 percent. With the anticipated funding from Senate Bill 1, over one million additional tons of RHMA will be placed in 2018 in comparison to 2017. The actual quantities used will be determined after construction close-out of each project. Recognizing that project changes may occur during construction that can alter pavement strategies and quantities, beginning with the 2013 year, this report will compare the actual amounts of material placed during construction. Also, Caltrans' districts are estimating the percent usage will be 48 percent for 2019, recognizing that not all projects and locations have been determined at this time.

The complete list of Caltrans' projects that incorporated waste tires is included in Appendix 1. Appendix 2 compares the various pavement types (by weight) constructed by Caltrans each year (2017, 2018, 2019). Appendix 3 shows the percent usage comparison of RHMA in 2017, 2018, and 2019.

Other transportation applications that incorporate waste tires include asphalt-rubber binder material used in chip seals and rubber mats for vegetation control. Asphalt-rubber chip seal projects are used to correct surface deficiencies and to seal and protect the pavement against the intrusion of surface water. Caltrans will continue the installation of rubber mats underneath guardrails as a method of vegetation control. This application has performed well in addressing Caltrans's maintenance need to suppress fire risk through weed control, while reducing herbicide usage and the exposure of maintenance staff to traffic and application of chemicals.

## Summary

Caltrans has promoted the use of RHMA as a roadway pavement strategy, and will prefer to use RHMA when evaluating flexible pavement designs. The increasing use of RHMA versus HMA will continue. As Caltrans helps to reduce the number of waste tires entering into California's landfills and stockpiles, Caltrans will continue to look for new and innovative uses of recycled waste tires like rubber mat vegetation control for transportation projects.

Although Caltrans cannot accurately quantify the use of RHMA on local roads, it is a pavement strategy continuously used by many local agencies. Caltrans is dedicated to the stewardship of natural resources as stated in our mission, vision, goals statements and will continue to look for opportunities for innovative uses of recycled products in transportation projects.